

REMARKS

Claims 13-20, 23 and 24 are pending. By this Amendment, claim 12 is canceled and claims 13-15, 17-19 and 23-24 are amended. No new matter is added.

Allowable Subject Matter

Applicants thank the Examiner for the indication that claims 14, 16 and 18 appear to contain allowable subject matter. Applicants have rewritten claims 14, 16 and 18 in independent form, corrected any informalities therein, and amended the remaining claims to depend from one of claims 14, 16 or 18. Applicants thus respectfully submit that this application is now in condition for allowance and early notice to that effect is respectfully requested.

Restriction Requirement

The Office Action maintains claims 19 and 20 as withdrawn from consideration. The Office Action notes that claims 19-20 and 12-18, 23 are related as process of making and product made. Applicants respectfully note that the U.S. Patent and Trademark Office Manual of Patent Examining Procedure (MPEP) requires that "if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which...include all the limitations of the allowable product claim will be rejoined" (MPEP 821.04).

Thus, Applicants respectfully request rejoinder of claims 19 and 20.

Claim Objection

The Office Action objects to claim 14 for containing asserted informalities. Applicants respectfully submit that this objection is overcome with the above amendment to claim 14 to include "...SEQ ID NO: 1". Reconsideration and withdrawal of the objection to claim 14 are respectfully requested.

Section 112, Second Paragraph, Rejections

The Office Action rejects claims 13, 15 and 17, and also claim 18, under 35 U.S.C. 112, second paragraph, as being indefinite. Applicants respectfully submit that the rejections under 35 U.S.C. 112, second paragraph, are overcome with the above amending of claims 13, 15 and 17 to recite SEQ ID NO: 6, 7 and 8, respectively, and the amending of claim 18 to change "corresponding to" to "--that encodes--". Reconsideration and withdrawal of the rejections of claims 13, 15 and 17, and also claim 18, under 35 U.S.C. 112, second paragraph, are respectfully requested.

Section 112, First Paragraph, Rejections

The Office Action rejects claims 12-13, 15, 17 and 23-24 under 35 U.S.C. 112, first paragraph. In the above amendments to the claims, the claimed cDNA is specifically limited to winter wheat chitinase cDNA compared to SEQ ID NO: 6 (claim 13), 7 (claim 15) or 8 (claim 17), claim 12 is canceled, and claims 23-24 are amended to depend from claim 14. Applicants respectfully submit that that the rejection under 35 U.S.C. 112, first paragraph, is overcome with these amendments. Reconsideration and

withdrawal of the rejection of claims 12-13, 15, 17 and 23-24 under 35 U.S.C. 112, first paragraph, are respectively requested.

Conclusion


Applicants respectfully submit that this application is in condition for allowance and such action is earnestly solicited. If the Examiner believes that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below to schedule a personal or telephone interview to discuss any remaining issues.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 01-2300 making reference to attorney docket number 107156-00004.

Please charge any fee deficiency or credit any overpayment to Deposit Account

No. 01-2300, making reference to attorney docket number 107156-00004.

Respectfully submitted,
ARENT FOX KINTNER PLOTKIN & KAHN PLLC


Robert K. Carpenter
Attorney for Applicants
Registration No. 34,794

Customer No. 004372
1050 Connecticut Avenue, NW, Suite 400
Washington, DC 20036-5339
Telephone: (202) 857-6000

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Enclosure: Marked-Up Copy of Amended Claims

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MARKED-UP COPY OF AMENDED CLAIMS

IN THE CLAIMS:

Please cancel claim 12 without prejudice to or disclaimer of the subject matter contained therein.

Please amend claims 13-15, 17-19 and 23-24 as follows:

13. (Twice Amended) A winter wheat chitinase cDNA characterized in that said cDNA encodes a protein with chitinase activity at low temperatures of 0°C or below, and further [according to claim 12,] characterized in that said cDNA comprises 771 nucleotides which encode an amino acid sequence comprising 250 amino acids and encodes an amino acid sequence that is 98% identical with an amino acid sequence encoded by barley chitinase cDNA having nucleotide sequence SEQ ID No: 6.

14. (Twice Amended) A winter wheat chitinase cDNA according to claim 13 , characterized in that said cDNA has nucleotide sequence that encodes an amino acid sequence listed as SEQ. ID No. 1 in Fig. 1.

15. (Twice Amended) A winter wheat chitinase cDNA characterized in that said cDNA encodes a protein with chitinase activity at low temperatures of 0°C or below, and further [according to claim 12,] characterized in that said cDNA comprise 972 nucleotides which encode an amino acid sequence comprising 323 amino acids and encodes an amino acid sequence that is 68% identical with an amino acid sequence endoded by rye chitinase cDNA having nucleotide SEQ ID No: 7.

17. (Twice Amended) A winter wheat chitinase cDNA characterized in that said cDNA encodes a protein with chitinase activity at low temperatures of 0°C or below, and further [according to claim 12,] characterized in that said cDNA comprises 960 nucleotides which encode an amino acid sequence comprising 319 amino acids and encodes an amino acid sequence that is 95% identical with an amino acid sequence encoded by spring wheat chitinase cDNA having nucleotide SEQ ID No: 8.

18. (Twice Amended) A winter wheat chitinase cDNA according to claim 17, characterized in that said cDNA has a nucleotide sequence that encodes an amino acid [corresponding to a polynucleotide] sequence listed as SEQ. ID. No. 3 in Fig. 3.

19. (Twice Amended) A method of isolating a [the] winter wheat chitinase [cDNA of claim 12] having a nucleotide sequence that [which] encodes an amino acid sequence listed as SEQ. ID. No. 1 in Fig. 1, a winter wheat chitinase cDNA having a nucleotide sequence corresponding to an amino acid sequence listed as SEQ. ID. No. 2 in Fig. 2, or a winter wheat chitinase cDNA having a nucleotide sequence corresponding to an amino acid sequence listed as SEQ. ID. No. 3 in Fig. 3, said method comprising the steps of:

extracting mRNA from winter wheat variety that has undergone a sufficient hardening process:

preparing cDNA and a cDNA library based on said mRNA;

analyzing nucleotide sequences of a number of plant-derived chitinase cDNAs which have all been published by EMBL/Genebank/DDBJ DNA Databank;

designing a pair of chitinase cDNA-specific degenerated primers with reference to highly conserved nucleotide sequence portions of the plant-derived chitinase cDNAs;

conducting PCR (polymerase chain reaction) using a pair of chitinase cDNA-specific degenerated primers and using said cDNA as a template, thereby amplifying fragments of chitinase cDNAs and obtaining amplified DNA fragments; and

using said amplified DNA fragments as probes for screening said cDNA library by a hybridization assay, to isolate recombinant plaques containing full length cDNA.

23. (Amended) A plant transformed with a cDNA according to claim 14 [12].

24. (Amended) The winter wheat chitinase cDNA of claim 14 [12], wherein the cDNA has been synthesized from mRNA extracted from winter wheat.